

No 4

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1824

W. C. H.

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On  
Cinchonal

in

Intermittent Fever

by

George N. Eckert

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Pennsylvania. 1828.

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## Cinchona

Before entering upon the consideration of Cinchona as a medicinal article in intermittent fever, I propose briefly to give a sketch of its natural history, and of its mode of introduction into regular practice.

The tree which affords this invaluable article of the *materia medica*, is a native of Peru. Notwithstanding the diligent researches of botanists, the history of this important genus seems yet to be involved in some considerable perplexity. Not less than about thirty different species have been described by authors. Though the different varieties of bark which now occur in commerce, are chiefly allotted into three kinds, vizd. the pale - the red - and the yellow. - Or in technical language, *Cinchona lancifolia* - *oblongifolia* - and *cordifolia*.

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The knowledge of the properties of bark, was originally acquired by accident. An Indian being seized with a violent paroxysm of fever, and finding no other water to quench his thirst, was forced to drink out of a pool, strongly impregnated with the bark from some trees having fallen into it, by which he was cured. How is the mode of its introduction into the medical studies less curious. It is related, that the lady of the viceroy of Peru, whose name was Cinchona, was affected with a tertian intermission of a very intractable nature. She was advised by the governor of Loaa, who had been made acquainted with the febrifuge powers of the bark, to use it as a remedy in her disease. She took it, and was soon relieved. The event of this case diffused its fame throughout Spain, where it came into general use. To commemorate this incident, Lomonos, in a spirit of gallantry, conferred the title of Cinchona on the medicine.

About the year 1649 the bark was carried to Italy by the Jesuits, where it was gratuitously distributed among the indigent sick at Rome, by Cardinal de Lugo and his physician, Sebastian Baldo, to the latter of whom is due the credit of

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having written the first work on this valuable article. Its fame  
soon rapidly extended throughout France, Germany, England  
&c; and although opposed on all sides, the value of its  
powers was finally established by the testimony of universal  
experience.

A variety of prejudices respecting the bark, prevalent for  
long time after its introduction into Europe, the more ancient  
of which do not even deserve to be noticed; such as, that those  
who use the medicine, will die within a year; or, according  
to others, in seven years; that it was particularly precious  
to fat persons; that it strikes into the bones; and that it  
is often followed by obstructions of the viscera, &c. &c.  
Happily such fantastic and ill-founded objections often  
gratify the malice of the artifices, slovenly &c.  
Yet this preposterous notion is cherished even at  
the present day, by the vulgar of some parts of our Country,  
so that it materially interferes with the proper adminis-  
tration of the medicine. Cases of this description have come  
under my own observation.

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Bark, as already observed, was originally employed in the cure of intermittent fever, a disease in which it has maintained an unrivalled reputation. At one time it was even considered a specific in that disease, and to adduce any additional <sup>evidence</sup> of its superior efficacy, would now indeed be altogether superfluous.

Notwithstanding all practitioners are agreed as to the utility of the medicine in question, still the unanimity of sentiment is not perfect as respects the period of the disease at which it ought to be exhibited; — the proportion of its administration; — and the utility, or inutility, of a previous resort to evacuant remedies. To determine where, and in what manner, the bark should be given, and also the necessity of promising evacuants, I will, for the sake of perspicuity, divide the consideration of the subject into the following heads, and treat of them in their proper order.

1. — The period of the disease proper for its administration.
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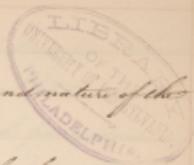
habit of the patient.

3—The climate, season of the year, and nature of the Epidemic.

4—The form of administering the bark.

To avoid repetition, I will not confine the consideration of accounts under any particular division.

Firstly.—The period of the disease proper for its administration. — As before observed, considerable diversity of opinion has been expressed upon this subject. Sydenham gave it at long intervals, and in doses too insignificant to exert much of its antifibrile power. He made an electuary of bark, one ounce, and sycop of roses, two ounces, of which the size of a nutmeg was a dose, repeated morning & night, on the intermission, or well days, until the whole was taken. The same quantity was repeated three, interposing a fortnight between each. Hberden gave as much as four ounces immediately upon the accession of the paroxysm; and Drs Clark, Balfour and others, recommended it during the hot stage. It is also stated that among the early notions on this point



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was the absurd one, that, in an intermission some time should be allowed to elapse, before the bark was exhibited, in order that morbid matter may be thrown off by the paroxysms. While such paradoxical rules as those regulated the administration of the bark, we cannot be surprised that it was not found very successful.

The proportion to exhibit the bark, is undeniably during the ague or intermission; and upon this point, practitioners are, now, I believe, unanimously agreed. But there can still be some discrepancy as to the particular period of the apopysis, at which it should be given in the largest quantity. Cullen is decidedly in favour of giving it in pretty large doses just before the accession of the paroxysm; and Alibert, on the other hand, asserts, that the bark should be given at as great an interval of time as possible from the usual expected paroxysm. Dr A. Philips Nelson, in his excellent work on febrile diseases, observes, "When the apopysis is short and the quantity of the bark required considerable, it must be given immediately after the paroxysm, and continued till

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the action of the succeeding fit, at longer or shorter intervals, as  
the case is more or less urgent, and the Stomach able to bear it.  
On the other hand, when the apopysis is long, especially when  
a great quantity of bark is not necessary, the exhibition should  
be delayed till within six or eight hours of the time at which  
the paroxysm is expected. For, a considerable quantity given at  
this period is more likely to descend, than the same quantity  
in smaller doses, throughout the whole of a long apopysis. In  
the cure of intermissions, continues he, 'this medium acts chiefly  
on the stomach and bowels, and that on that account our indica-  
tions should be directed, to have a proper quantity of bark in  
the patient, vice, at the time the paroxysm is expected.'

To prevent the recurrence of the paroxysms, is our great  
object; it is manifest, that we should begin the administra-  
tion of the bark (provided no contra-indications are present)  
at a period sufficiently antecedent, to ensure us, that the system  
will be fully under its impression: at the time the fit is anti-  
cipated. The early exhibition of the bark in the apopysis, is  
the more essentially necessary, when we consider its operation

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on the system. There are few sensible effects displayed by it when it perfectly agrees with the patient. It is slow and almost insensible in its operation, and, unlike stimulants produces no sudden alteration in the pulse, or any of the functions of the animal economy. The purgative power therefore, which it possesses, are only exerted by its preventing the recurrence of the paroxysms, and thus effecting a removal of the disease.

With a view to avail ourselves of every advantage, it has been the practice to exhibit the bark from the beginning to the close of the apopysis in quantities as large and as frequently repeated as the stomach will bear. The average dose is from one to two drachms repeated every one or two hours. — We now come to the consideration of the next division.

Secondly. — The nature of the symptoms, with the age and habit of the patient. With regard to the administration of the bark in the ordinary cases of intermittent fever, little need be said. The propriety of evacuating the Stomach and bowels is now fully established, and, although doubted by some, yet general experience is decidedly in favour of the practice. There can be no

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doubt, that many cases may be effectively cured by the bark without any  
preparatory excretions whatever. This is more especially the case in  
those instances which occur in spring or winter, in subjects who have  
had the disease in the preceding autumn; and which may, therefore,  
be considered as relapses from the former attacks. But in intermit-  
tents occurring in summer and autumn, in miasmatic districts,  
and where the biliary secretions are much deranged, emetics and pur-  
cerial purges are strongly demanded; and every practitioner acknow-  
ledges their usefulness. Besides other salutary effects which con-  
sists produce on the general system, they remove the morbid con-  
tents of the alimentary canal, especially of the Stomach; and for  
Dr. Caldwell observed in a note to Cullen's first lines) discharge  
from that organ; all such adhesive matter as might interpose be-  
tween the bark and its internal surface, thus favoring for that ar-  
ticle a more immediate access to the veins, and thereby add  
to the efficacy of its action. In ordinary cases of intermittents,  
nothing else is required, preliminary to the receipt of the bark.

However, cases frequently occur, which from the nature  
of their symptoms, require additional measures before the bark

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can be administered with advantage. When the case is of an inflammatory character, sweating is one of our most prompt and efficacious remedies. Bleeding, observes Dr. Clark in his materia medica, "is an essential preliminary in some cases of intermissions before using the bark. I have had many cases of this kind in my own practice. The tendency to inflammatory action is sometimes so great that the fever has not power to develop itself in its genuine character; the intermission is incomplete, attended with restlessness, and an irritated state of the pulse; the cold stage is not marked by strong rigors, but only by creeping and protracted chills, and the hot stage does not go off by a profuse and universal perspiration. In such cases the bark can seldom be employed with any decided advantage, unless it be preceded by sweating, and other emetics. Very few good bleeding and cathartics, in instances of this kind, the fever will commonly appear its genuine character, the rigors will be strong, the perspiration which concludes the hot stage copious and general. The bark will now act beneficially, however ineffectually, as may have been previously employed."

It has been recommended by some, to delay the use of the bark

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until the inflammatory state of the system had been overcome by  
the continuance of the disease. This undoubtedly would have  
a tendency to protract the cure, and perhaps often be attended with  
the worst consequences. We are only to delay it until, by the appro-  
priate measures, we have converted that state of the system, which  
prohibited its earlier employment.

The general plan in intermitting and remitting fevers, is  
not to give the bark, until a complete apyrexia or remission  
of the symptoms has taken place. But should the case present  
a typhoid tendency, such restrictions will cease; and we are then  
to administer the medicine alone, or with articles, more cordial and  
stimulating, without delaying for a perfect solution of the paroxysm.  
Dr. Wilson, whom I have already quoted, remarks, when ~~the~~  
the ability is great, the symptoms consequently abounding, and much  
to be apprehended if the fever again recurs, especially when the apy-  
rexia is short and imperfect, it is often advisable to begin to give  
the bark, about the end of the hot fit; for even if delayed until  
the remission takes place, it might be impossible to throw in a  
sufficient quantity before the succeeding paroxysm. And if the

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Patient be much reduced, and the symptoms termed putridicent.  
In such cases the bark is proper after the tumours  
have become so slight as to hardly perceive.

Several cases of such a malignant character were detailed  
by Dr. Parrish, whilst sitting on fever. In this he commences  
repeating in the febrifuge, so soon as there was the slightest  
appearance of a vomition, and continued it until the return  
of the paroxysm, which began from two to four grains of Opium;  
and thus, with appropriate auxiliaries, had the pleasure to see  
several of them recover. It would even appear that vomit-  
ting and purging should not prevent our giving the bark, in some  
cases. On the speaking of the propriety of delaying the use of the  
bark in some cases, until after the operation of an emetic or cathar-  
tic, the author just mentioned observes, that "in urgent cases, and  
when there is no inflammatory diathesis, the bark ought not to  
be delayed an hour on account of the state of the stomach and bow-  
els." A key to this appears from the observations of Dr. Jackson,  
Dr. Donald, Allaire and others, that actual vomiting and pur-  
ging should not induce us to delay the exhibition of the bark.

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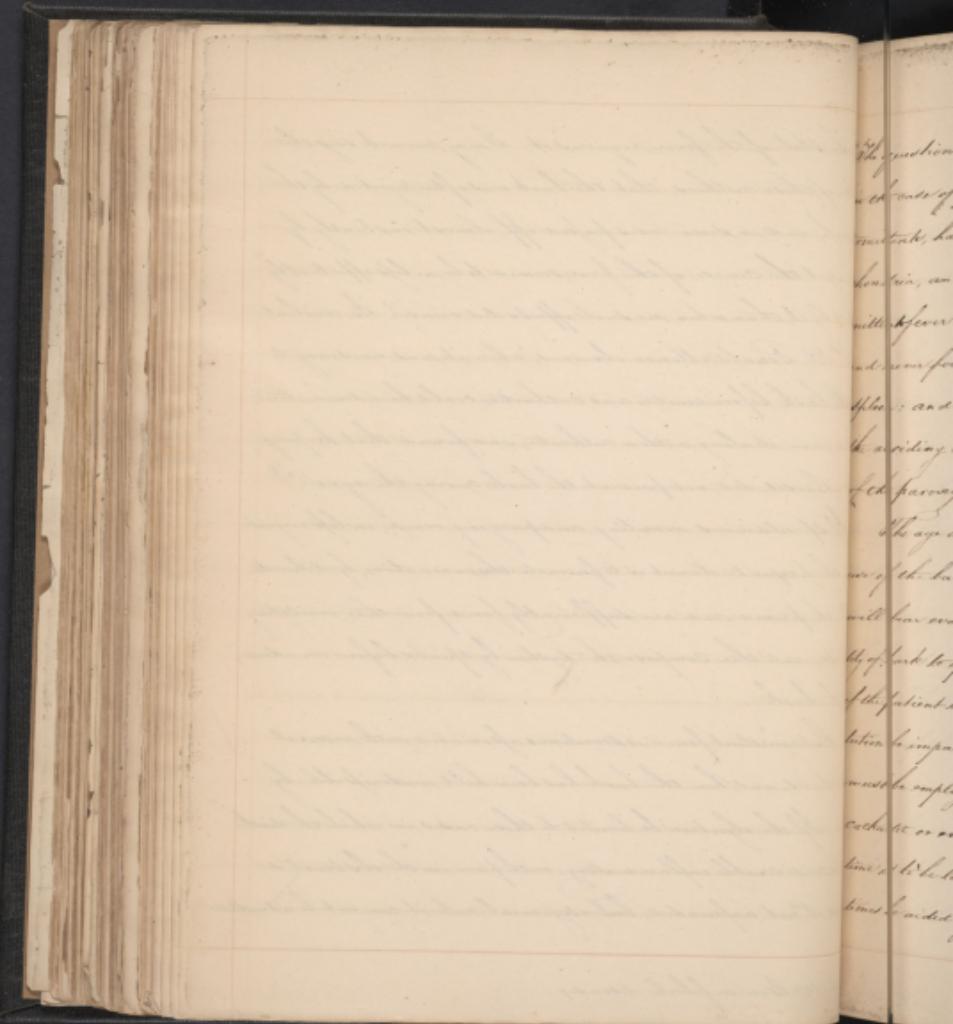
when the state of the fever requires it. I may remark, by the former of these authors, that the bark was often rejected by the stomach, and in some cases passed off almost instantly by stool, yet the course of the fever seemed to be as little effectually checked by it than when no such effects did occur! In violent cases Dr. Pennington hence observes, when it was necessary to give the bark before emetics and cathartics could be administered, I often gave it along with a cathartic, and found that the purging of a cathartic, did not prevent the bark curing the ague.<sup>24</sup>

If spontaneous vomiting, and purging occur, in less urgent cases, the proper treatment is to promote the evacuations, by diuretics, until the prima via are sufficiently freed from their irritating contents; and then compound the system by opiate, before evicting the bark.

Intermittent fever is sometimes associated with visceral obstructions, and then the bark has been held inadmissible by some. If the objection be limited to those cases in which the distichia is considerably inflammatory, with pain in the obstructed viscera, it is not unfounded; but a general rule it can not be admitted.

Vide Wilson's medical library.

The question  
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will have even  
more weight  
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in determining  
the probability  
of his recovery.



"The question has several times occurred to me," says Dr. Cullen,  
"in the case of persons, who having frequently, laboured under inter-  
mittent fever, had tumours and intermissions remaining in the hypo-  
thalamia, and had, when in that condition, a portion of the inter-  
mittent fever. In such cases I have freely employed the bark,  
and never found it to increase the affection of the brain and  
spoon: and in other such cases I have constantly found, that  
the avoiding the bark, and admitting, therefore, the repetition  
of the paroxysms, brought on disorders which often proved fatal."

The age and habit materially influence our practice in the  
use of the bark. Patients that are young and of robust habit  
will bear evacuations, much more freely, and require less quantity  
of bark to effect a cure, than the more infirm and aged. But  
if the patient be old, or reduced by previous disorders; or if his consti-  
tution be impaired by intemperance or any other cause, evacuations  
must be employed with much circumspection. To provide a gentle  
cathartick or emetic, will generally be sufficient, and then not much  
time is to be lost before we administer the bark, which must some-  
times be aided by the more diffusible stimuli. Cases of thy-

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description ever detailed by Dr. Parrish, in his lectures on fever. The subject of one of these, who was a boy, had just recovered from an attack of diarrhoea, before he took the fever; and although the fever appeared mild at first, he rapidly sunk into a febrile state, requiring the most active and stimulating treatment: — he recovered from this attack, but in the spring had another, and the bark, soon SC, was required to soon; yet the prostration was again considerable. In the succeeding autumn he had another attack, but now only a little rhubarb was given; and this was immediately followed by the bark, sanguaria, without any other preparatory medicines. Thus by the early use of the medicine, he was prevented, in this attack, from sinking into that low stage which characterized the two former attacks.

Thirdly. — The climate, season of the year, and nature of the epidemic. — In all climates diseases are more generally associated with inflammatory symptoms, and of this nature the one under consideration also partakes. The siffling plant is more propitious, previously to the use of the bark, and as dibility is not so much to be apprehended, it can be

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carried, with safety, to a greater extent. But in warm and sultry climates, scarcely the reverse is said to be the case. The fever of those climates runs their course very rapidly, and a change from a state of increased excitement to that of debility, is often very sudden. Exacerbations, it appears, although they may sometimes prevail at the beginning of the attack, often prove fatal by increasing the subsequent debility. On this account, writers on hot climates, insist on the necessity of having recourse to the bark at an early period.

Intermittents occurring in spring and winter, it is generally allowed, admit of longer delay in the exhibition of the bark, than those prevailing in the summer and autumn. It is especially, in the case of renal intermittents, that the phlegmatic diathesis occurs says Dr. Cullen, "and therefore, that upon this and other considerations, the exhibition of the bark in them may be more safely delayed, but even in this it may often be exhibited very early."

The common order of treatment is sometimes materially influenced by the nature of the epidemic. This was strikingly evinced in the tertian and pernicious prevailing during the last season in this city and its vicinity. It was not uncommon to

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so them taking on the character of dysentery, and sometimes  
alternately changing in their progress. Some years it is few  
days for determinations to the head, or lungs &c, producing all  
the symptoms of inflammation of those organs; and until they  
are relieved, the use of the bark is prohibited. However, the  
several affection just mentioned, did not do much interfere  
with the employment of the bark as we might, a priori, suppose;  
for I treated some cases when it was given with little regard  
to the dysenteric complaint. This was especially the practice  
when the case presented a typhoid tendency.

Fourthly. — The form of administering the bark.  
It has been observed, almost the only species now employed in  
this country, are the pale, the red and the yellow, according  
to chemical analysis, the red is superior to either of the two other  
species, and American practitioners generally, acquiesce in the  
correctness of this statement. Bark is prescribed in  
a variety of forms. Besides the substance, it is given in can-  
dies, lozenges, decoction and infusion; but when the stomach  
will bear the substance, we ought not to have recourse to the

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other mentioned forms. However, in some cases, from the insinuability, and the manner which it excretes, the powder can not be retained; and under such circumstances, some of the other preparations are substituted with advantage. But of all the different preparations, none perhaps is better adapted, or more efficacious, than the sulphate of quinine. It was first used in the Parisian hospitals, in obstinate intermissions, in doses of four grains, morning and evening; and it is stated, with great success. To Far & Kingz the credit is due of having first prepared it in this City, or perhaps, the Country. Since then it has acquired much celebrity, and its employment has been attended with signal success. Besides its promptness in curing ague, the facility with which it is administered is a great recommendation. This preparation, being almost tasteless, and minute in its dose, will often be taken when every other form would be rejected or refused. On this account it seems to be particularly adapted to children and other delicate persons, tho' its employment is by no means confined to these. Eight grains are considered equivalent to an ounce.

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of genuine bark. It is exhibited in the shape of pills, or dissolved in a solution of gum arabic, with a little sugar.

In the administration of the bark in substance, it will not be amiss to say a few words on the different vehicles which are employed. It is not unfrequently given in simple water, or coffee; but milk, from its concealing the taste of the bark, is preferable; and in common cases, or when we must avoid additional excitement, such articles are the best adopted. But if there be reduction of strength, the powder may be given in porter, or wine; and in patients accustomed to the use of ardent spirits, brandy is often the most appropriate vehicle. Some speak highly of lime water, as particularly increasing the power of the bark.

When the stomach is weak, aromatic, and bitter are often advantageously conjoined with the bark. If it induces purging, we must have recourse to opiates and astringents; but if there is reason to suspect, that it is dependant on acidity, we combine it with some antacid. On the other hand, if occasion requires, it is necessary to add some gentle laxative;

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and for this purpose Rhubarb is particularly adopted.

The virtues of the bark are sometimes greatly improved by uniting with it other articles, particularly cloves, or some tartar, or the carbonate of potash, or soda. The proportion is about a drachm to the ounce. Saponaria is often beneficially combined with it, either in substance, or what is perhaps more common, in the form of an infusion.

When, from the resistance of children, or except in irritability of the stomach, the bark can not be taken by the mouth, it has been recommended to inject it per anum, or apply it externally to the body; - for the latter, different means have been proposed. The employment in this way, is stated to have been occasionally service. Compared, however, with an exhibition of the bark internally, it must prove an insufficient substitute; and though the introduction of the sulphate of quinine into common practice, we will, perhaps, on but few occasions, have need to resort to these more feeble and inconvenient means.

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